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Foreword

The purpose of the *CDC Surveillance Summaries* is to make available the most current information on conditions of public health interest for which CDC has major responsibility. The *CDC Surveillance Summaries* provide detailed analysis of the most current available data obtained for CDC surveillance programs. These reports complement other data published by CDC in the *Morbidity and Mortality Weekly Report (MMWR)*, the *MMWR Annual Summary*, and various disease-surveillance reports. This volume contains epidemiologic information derived from surveillance forms, special investigations, and other sources of information collected at the state and national levels.

History of CDC Surveillance Activities

CDC has been actively involved in disease-surveillance activities since the formation of the Communicable Disease Center in 1946. The original scope of the National Surveillance Program included the study of malaria, murine typhus, smallpox, psittacosis, diphtheria, leprosy, and sylvatic plague. In 1954, a surveillance section was established within the Epidemiology Branch of CDC, primarily concerned with planning and conducting continuing surveillance and making periodic reports. National emergencies such as the Asian influenza pandemic and the discovery of Legionnaires' disease have prompted the involvement of CDC in new surveillance activities. Over the years the surveillance activities of CDC have expanded to include not only new areas in infectious disease but also programs in human reproduction, environmental health, chronic disease, risk reduction, and occupational safety and health. Ongoing evaluation of these programs has led to new methods of data collection and analysis and has prompted examination of how data are disseminated to the public health community.

In 1980 and 1981, a survey of CDC staff and state epidemiologists suggested that improved coordination of surveillance reports with the *MMWR* and the *MMWR Annual Summary* would facilitate timely publication; provide greater uniformity in the acquisition, evaluation, and reporting of surveillance data; and encourage use of these data. Several approaches to the development of a systematic process of disseminating disease-specific surveillance reports were considered. On the basis of considerations of timeliness, cost advantages, and editorial uniformity, a report published on a quarterly basis was recommended. Subsequent financial and personnel constraints have made it necessary to publish these reports less frequently.

The *CDC Surveillance Summaries* contain information more reflective of the detailed surveillance reports of the past. CDC hopes that the *Surveillance Summaries* will disseminate surveillance data on a regular schedule, improve the clarity of community public health information, and also produce a cost savings. Although the *CDC Surveillance Summaries* are published more often than once a year, they will typically contain annual data rather than interim data. The *MMWR Annual Summary* will complement rather than serve as the cumulative summary of the *Surveillance Summaries*.

Data Sources

Data on the reported occurrence of notifiable diseases are derived from reports supplied by the state and territorial departments of health and CDC program activities. These data are routinely published in the *MMWR* and compiled in final form in the *MMWR Annual Summary*.

CDC also maintains national surveillance programs for selected diseases—with the cooperation of state and local health departments and other federal agencies—and publishes detailed epidemiologic analyses periodically. Data appearing in the *CDC Surveillance Summaries* or in a surveillance report may not agree exactly with reports published in the *MMWR* because of differences in timing of reports or because of refinements in case definition. It should be noted that data collected for the *MMWR* and the more detailed data published by individual CDC programs are collected independently.

These data should be interpreted with caution. Some diseases that cause severe clinical illness and are associated with serious consequences are probably reported quite accurately. However, diseases that are clinically mild and infrequently associated with serious consequences are less likely to be reported. Additionally, subclinical cases are seldom detected except in the course of epidemic investigations or special studies. The degree of completeness of reporting is also influenced by the diagnostic facilities available, the control measures in effect, and the interests and priorities of state and local officials responsible for disease control and surveillance. Finally, factors such as the introduction of new diagnostic tests and the discovery of new disease entities may cause changes in disease reporting independent of the true incidence of disease. Despite these limitations, the data in these reports have proven to be useful in the analysis of trends.

Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Abortion	Division of Reproductive Health Center for Health Promotion and Education	1986 (SS 35/2) (data from 1982-1983))
Alcohol	Division of Surveillance and Epidemiologic Studies Epidemiology Program Office	1986 (SS 35/2) (data from 1980-1983)
Behavioral risk factors	Division of Nutrition Center for Health Promotion and Education	1984 (SS 33/1) (data from 1981-1983)
Beryllosis cohorts: registry of disease and exposure	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	March 1983 (data from 1951-1980)
Biologics	Data Management Branch Division of Immunization Center for Prevention Services	December 1982 (1982 data)
Botulism	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	May 1979 (data from 1899-1977)
Brucellosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	June 1979 (1978 data)
Cancers, endometrial and ovarian	Epidemiologic Studies Branch Division of Reproductive Health Center for Health Promotion and Education	1986 (SS 35/2) (data from 1973-1981)
Coal workers' pneumoconiosis	Epidemiological Investigations Branch Division of Respiratory Disease Studies National Inst. for Occup. Safety & Hlth.	1985 (SS 34/1) (data from 1970-1981)
Congenital malformations	Division of Birth Defects and Developmental Disabilities Center for Environmental Health	September 1985 (data from 1981-1983)
Dengue	Dengue Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	1985 (SS 34/2) (data from 1983-1984)
Diabetes	Division of Diabetes Control Center for Prevention Services	June 1979 (1978 data)

*Publications denoted by "SS" appeared in issues of *CDC Surveillance Summaries*. Other reports listed can be obtained by contacting the responsible administrative unit listed.

Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Diphtheria	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	July 1978 (data from 1971-1975)
Ectopic pregnancy	Division of Reproductive Health Center for Health Promotion and Education	1986 (SS 35/2) (data from 1970-1983)
Encephalitis	Arbovirus Reference Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	May 1981 (1978 data)
Enterovirus	Respiratory and Enterovirus Branch Division of Viral Diseases Center for Infectious Diseases	November 1981 (data from 1970-1979)
Fifteen leading causes of death in the U.S., 1978	Health Analysis and Planning for Preventive Services Center for Prevention Services	September 1982 (1978 data)
Foodborne disease	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	1986 (SS 35/1) (1982 data)
Gonorrhea	Division of Sexually Transmitted Diseases Center for Prevention Services	1984 (SS 33/4) (data from 1983-1984)
Hepatitis	Hepatitis Branch Division of Viral Diseases Center for Infectious Diseases	1985 (SS 34/1) (data from 1982-1983)
Homicide	Violence Epidemiology Branch Office of the Director Center for Health Promotion and Education	May 1983 (SS 32/2) (data from 1970-1978)
Hysterectomy	Epidemiologic Studies Branch Division of Reproductive Health Center for Health Promotion and Education	1986 (SS 35/1) (data from 1981-1982)
Influenza	Influenza Branch Division of Viral Diseases Center for Infectious Diseases	July 1984 (data from 1983-1984)
Lead poisoning in workers	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	April 1983 (data from 1976-1980)

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Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Leprosy	Respiratory and Special Pathogens Branch Division of Bacterial Diseases Center for Infectious Diseases	April 1976 (data from 1971-1973)
Leptospirosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	August 1979 (1978 data)
Malaria	Malaria Branch Division of Parasitic Diseases Center for Infectious Diseases	September 1985 (1984 data)
Maternal mortality	Division of Reproductive Health Center for Health Promotion and Education	1984 (SS 33/1) (data from 1974-1978)
Measles	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	September 1982 (data from 1977-1981)
Mumps	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	July 1984 (data from 1977-1982)
National electronic injury surveillance system	Safety Surveillance Branch Division of Safety Research National Inst. for Occup. Safety & Hlth.	May 1983 (SS 32/2) (1982 data)
National Occupational Hazard Survey (NOHS)	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	NIOSH Technical Report DHHS (NIOSH) Pub. No. 83-117
National Occupational Health Survey of Mining	Division of Respiratory Disease Studies National Inst. for Occup. Safety & Hlth.	1986 (SS 35/2) (data through 1985)
Nosocomial infections	National Nosocomial Infections Surveillance System Hospital Infections Program Center for Infectious Diseases	1986 (SS 35/1) (1984 data)
Nutrition	Division of Nutrition Center for Health Promotion and Education	November 1982 (1980 data)

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Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Occupational characteristics of disabled workers	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	July 1980 (data from 1969-1978)
Occupational hazard surveillance	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	1985 (SS 34/2) (data from 1970-1982)
Occupational injuries among loggers	Safety Surveillance Branch Division of Safety Research National Inst. for Occup. Safety & Hlth.	August 1983 (SS 32/3) (data from 1969-1974)
Occupational injuries in the meatpacking industry	Safety Surveillance Branch Division of Safety Research National Inst. for Occup. Safety & Hlth.	1985 (SS 34/1) (data from 1976-1981)
Occupational mortality in Washington State	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	DHHS (NIOSH) Pub. No. 83-116 (data from 1950-1979)
Pediatric nutrition	Division of Nutrition Center for Health Promotion and Education	1983 (SS 32/4) (1982 data)
Pelvic inflammatory disease	Division of Sexually Transmitted Diseases Center for Prevention Services	1983 (SS 32/4) (data from 1965-1982)
Plague	Plague Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	1985 (SS 34/2) (1984 data)
Poliomyelitis	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	December 1982 (data from 1980-1981)
Psittacosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	February 1983 (SS 32/1) (1979 data)
Rabies	Viral and Rickettsial Zoonoses Branch Division of Viral Diseases Center for Infectious Diseases	1985 (SS 34/1) (1983 data)

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Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Reye syndrome	Epidemiology Office Division of Viral Diseases Center for Infectious Diseases	1984 (SS 33/3) (1983 data)
Rickettsial disease (RMSF, murine typhus, Q fever, endemic typhus)	Viral and Rickettsial Zoonoses Branch Division of Viral Diseases Center for Infectious Diseases	May 1981 (1979 data)
Rocky mountain spotted fever	Viral and Rickettsial Zoonoses Branch Division of Viral Diseases Center for Infectious Diseases	1984 (SS 33/3) (data from 1981-1983)
Rubella	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	1984 (SS 33/4) (1983 data)
Salmonella	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	December 1982 (1980 data)
Sentinel health event (occupational) (SHE)	Surveillance Branch Division of Surveillance, Hazard Evaluations, and Field Studies National Inst. for Occup. Safety & Hlth.	September 1983
Summer mortality	Division of Environmental Hazards and Health Effects Center for Environmental Health	February 1983 (SS 32/1) (data from 1979-1981)
Surgical sterilization	Epidemiologic Studies Branch Division of Reproductive Health Center for Health Promotion and Education	August 1983 (SS 32/3) (data from 1979-1980)
Toxic-shock syndrome	Respiratory and Special Pathogens Branch Division of Bacterial Diseases Center for Infectious Diseases	1984 (SS 33/3) (data from 1980-1984)
Trichinosis	Helminthic Diseases Branch Division of Parasitic Diseases Center for Infectious Diseases	1986 (SS 35/2) (1984 data)

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Surveillance Programs, CDC

Surveillance program	Responsible unit	Most recent report/summary*
Tuberculosis	Division of Tuberculosis Control Center for Prevention Services	July 1985 (1984 data) TB Statistics: States & Cities November 1983 (1980 data) TB in the United States
U.S. immunization survey	Surveillance, Investigations, and Research Branch Division of Immunization Center for Prevention Services	April 1983 (data from 1979-1982)
Venereal disease	Division of Sexually Transmitted Diseases Center for Prevention Services	(1980 data) Sexually Transmitted Diseases Statistical Letter-No. 130 (data from 1978-1979) STD Fact Sheet-Edition 35
Water-related disease outbreaks	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	September 1984 (1983 data)

*Publications denoted by "SS" appeared in issues of *CDC Surveillance Summaries*. Other reports listed can be obtained by contacting the responsible administrative unit listed.

Patterns of Alcohol Consumption and Alcohol-Related Morbidity and Mortality

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Introduction

Alcohol misuse rivals tobacco use as the most preventable health problem in the United States, and the prevention of alcohol and drug abuse has been targeted as one of the 1990 Objectives for the Nation (*1*). In this article, we review trends in alcohol consumption and in mortality and hospitalization rates for selected alcohol-related diagnoses. These data indicate a slight decline since 1980 in alcohol consumption and in deaths and hospital admissions attributed explicitly to alcohol. More intensive surveillance efforts are needed to establish the true magnitude of alcohol-related health problems.

Methods

Consumption. Estimates on per-capita alcohol consumption are based on sales figures published by the Distilled Spirits Council of the United States, the Wine Institute, and the United States Brewers' Association, Inc., for the years 1974-1984 (*2-5*). Provisional data (based on the first 3 months of data for 1985) from the 1985 National Center for Health Statistics (NCHS) Health Interview Survey, administered to a national probability sample of U.S. residents 18 years of age or older, describe patterns of consumption during the year preceding the interview (*6*). Data from CDC's Behavioral Risk Factor Survey indicate the prevalence of 1) consumption of two or more drinks daily in the 14 days before the interview and 2) self-reported driving after "having had perhaps too much to drink" (unpublished data, CDC). This survey is conducted on a state-by-state basis, with 15 states reporting in 1984. Patterns of alcohol use among teenagers in the United States are reported from the annual High School Senior Survey conducted by the National Institute on Drug Abuse (*7*); each year's sample is drawn from all seniors in public and private high schools in the coterminous United States.

Health Events. Numbers of deaths explicitly attributed to alcohol-related causes were obtained from NCHS mortality tapes for the years 1980-1983. Years of potential life lost between birth and age 65 years were also calculated for the same causes of death (*8*). In addition, the NCHS multiple-cause mortality tapes for 1982 were examined for the presence of either alcohol dependence (International Classification of Diseases, 9th Revision [ICD-9] code 303) or alcohol abuse (ICD-9 code 305.0).

Numbers of hospitalizations for causes explicitly attributable to alcohol were obtained from the NCHS Hospital Discharge Survey; these data were based on a sample of discharges from short-stay nonfederal hospitals in the United States for the years 1980-1982.

Results

Consumption. From 1974 through 1984, there was a 0.7% decrease in per-capita consumption (among persons 14 years of age and older) of commercially produced beverage alcohol in the United States. This decrease was due entirely to a 15.4% decline in consumption of distilled spirits. Per-capita consumption of beer and wine rose 8.0% and 19.4%, respectively, over the same period. In 1984, 52.3% of beverage alcohol consumed in the United States was from beer, 34.3% from distilled spirits, and 13.4% from wine.

Provisional data from the 1985 NCHS Health Interview Survey (HIS) indicate that approximately 44% of Americans 18 years of age or older (33% of males and 43% of females) reported abstention from alcohol during the year immediately preceding interview. Fifty-two percent of respondents (63% of males and 42% of females) who reported drinking within the past year were defined by HIS as current drinkers (at least one drink within the preceding 2 weeks). Eleven percent of current drinkers (15% of males and 7% of females) reported daily alcohol use, and 8% (13% of males and 4% of females) reported having consumed five drinks or more on at least one occasion within the 2 weeks before the interview.

State-specific results of CDC's 1984 Behavioral Risk Factor Survey of adults 18 years of age and older indicate that the proportion of respondents who reported an average consumption of two or more drinks per day during the previous month ranged from 3% in Utah to 12% in Arizona (median, 8%). The proportion of respondents who reported driving after "having had perhaps too much to drink" ranged from 2% in South Carolina to 11% in Wisconsin (median, 5%).

According to the annual 1984 High School Senior Survey, 14% of respondents abstained from alcohol during the year preceding the interview, whereas 67% (71% of males and 63% of females) reported current use (within the preceding 30 days). Five percent of current drinkers (7% of males and 3% of females) reported daily alcohol use. The number of current users among high school seniors declined from 78% to 67% between 1978 and 1984, and the prevalence of daily use fell from 7% to 5% during the same period.

The prevalence of binge drinking (five or more drinks on at least one occasion within the preceding 2 weeks) has remained relatively high among high school students. From 1975 to 1979, the number of respondents reporting binge drinking increased from 37% to 41% and remained at that level through 1983. In 1984, 39% of respondents (48% of males and 30% of females) reported binge drinking in the 2 weeks before the interview.

Health Events. An overall decline in deaths attributable entirely to alcohol-related causes was seen for all primary diagnoses for the years 1980-1983, with the exception of alcoholic cardiomyopathy; however, the trends were not consistent (Table 1). The decrease in alcohol-related mortality was also reflected in an overall decline of 14% in years of potential life lost for these causes of death (Table 2). Although alcohol dependence and alcohol abuse were listed as the primary cause of death in only 0.2% of all deaths in 1982, examination of NCHS multiple-cause mortality tapes showed that one or both of these diagnoses were present in 22,000 (1.1%) of the deaths that year. At short-stay nonfederal hospitals, there was no consistent trend in the number of admissions for selected alcohol-related diagnoses (Table 3), although there were 4% fewer such admissions in 1982 than in 1980. Admissions associated with alcohol abuse rose 28% between 1980 and 1982, but admissions associated with alcohol dependence and alcohol psychosis decreased by 5% and 13%, respectively.

Discussion

These data demonstrate a slight overall decline in alcohol consumption between 1974 and 1984. Although most authorities believe that consumption trends correlate with overall

trends in cirrhosis mortality, such trends should not be used alone in estimating the magnitude of alcohol problems (*9*).

Several of the 1990 Objectives relate to reducing risk factors, including alcohol misuse, among adolescents 12-17 years old (*1*). Currently, information on this age group is available at the national level only for high school seniors; these data indicate that the number of abstainers in this group is increasing, with a concomitant decrease in the number of teenagers reporting daily use. Reports of binge drinking, however, have not decreased over the past 4 years, and the number of such reports among adolescents far surpasses that among adults 18 years of age and older.

In concordance with data on the prevalence of consumption and other risk factors, information on selected adverse alcohol-related events indicates a slow decline in deaths from

TABLE 1. Deaths attributed to selected alcohol-related causes,* United States, 1980-1983

ICD-9 code	Cause	Deaths			
		1980	1981	1982	1983
291	Alcohol psychosis	454	453	389	346
303	Alcohol dependence	4,350	4,207	3,914	4,002
305.0	Alcohol abuse	889	771	768	835
425.5	Alcoholic cardiomyopathy	650	647	664	711
571.0	Alcoholic fatty liver	1,166	951	961	1,027
571.1	Acute alcoholic hepatitis	794	785	687	725
571.2	Alcoholic cirrhosis of liver	9,166	8,567	7,893	7,571
571.3	Alcoholic liver damage	1,812	1,782	1,752	1,753
E860	Toxic effects of ethyl alcohol	385	384	412	341
TOTAL		19,666	18,547	17,440	17,311

*Includes only those causes that were 100% attributable to alcohol misuse

TABLE 2. Years of potential life lost (YPLL) attributed to selected alcohol-related causes,* United States, 1980-1983

ICD-9 code	Cause	YPLL			
		1980	1981	1982	1983
291	Alcohol psychosis	5,630	4,982	4,045	3,390
303	Alcohol dependence	51,952	49,310	44,889	46,149
305.0	Alcohol abuse	16,873	15,565	15,758	17,366
425.5	Alcoholic cardiomyopathy	7,660	6,862	7,000	7,455
571.0	Alcoholic fatty liver	21,155	16,195	16,870	18,180
571.1	Acute alcoholic hepatitis	11,735	11,005	9,995	9,935
571.2	Alcoholic cirrhosis of liver	92,977	86,202	78,125	73,462
571.3	Alcoholic liver damage	21,570	21,470	20,825	20,567
E860	Toxic effects of ethyl alcohol	7,351	6,033	8,152	6,230
TOTAL		236,903	217,624	205,659	202,734

*Includes only those causes of years of potential life lost that were 100% attributable to alcohol misuse

alcohol-related causes since 1980. Trends in numbers of hospital admissions due to alcohol-related diagnoses are less consistent.

Although trends for deaths and hospital admissions may be described for diagnoses that are 100% attributable to alcohol, it is difficult to follow trends for the majority of alcohol-related adverse events (e.g., medical diagnoses such as pancreatitis and head and neck cancer, trauma such as child abuse, and burns). For most diagnoses, estimates of the proportion of cases related to alcohol misuse either are not available or they range widely (*10*); furthermore, how these proportions have changed over time is unknown. Many other hospital admissions and deaths undoubtedly are related to—but not reported as 100% attributable to—chronic or acute effects of alcohol use.

The problem of alcohol misuse is complex, involving not only the drinker, but also his or her family, friends, and community. Currently, data on alcohol misuse in the United States are limited in both quality and quantity. Most surveillance activities have focused on alcohol consumption and production and not on health outcomes, with the exception of cirrhosis and—more recently—traffic fatalities (*11,12*). Although such data have been useful in following trends, they have been of limited value in measuring the impact of alcohol misuse on the community and in comparing the magnitude of alcohol-related health problems with other health problems (e.g., smoking-related illness) for which health authorities are competing for limited resources for prevention.

Efforts to improve the ascertainment of alcohol-related mortality have included increased blood-alcohol testing of motor-vehicle fatalities (*12*) and documentation by autopsy of chronic alcoholism unreported on death certificates (*13*). A recent study of postservice mortality among Vietnam-era veterans documents the shortcomings of death certificates as tools for the surveillance of alcohol-related fatalities, both for natural and for injury-related deaths; for example, a clinical review panel recorded alcohol-related impairment of the victims of unintended fatal injuries seven times more often than the certifiers who completed the death certificates (D. Pollock, personal communication, CDC). Findings from these and other studies (*14*) indicate that the morbidity and mortality related to alcohol misuse have probably been grossly underestimated. Basic research is needed to show the association between alcohol

TABLE 3. Alcohol-related admissions* to short-stay nonfederal hospitals, United States, 1980-1982

ICD-9 code	Diagnosis	Admissions 1980	1981	1982
291	Alcohol psychosis	66,088	72,705	57,505
303	Alcohol dependence	438,909	445,532	416,538
305.0	Alcohol abuse	38,461	40,404	49,395
425.5	Alcoholic cardiomyopathy	1,435	3,560	2,184
571.0	Alcoholic fatty liver	578	310	721
571.1	Acute alcoholic hepatitis	12,460	10,157	11,195
571.2	Alcoholic cirrhosis of liver	19,616	25,775	19,168
571.3	Alcoholic liver damage	9,556	9,668	7,067
980.0	Toxic effects of ethyl alcohol	905	402	239
TOTAL		588,008	608,513	564,012

*Includes only those causes of admissions that were 100% attributable to alcohol misuse

consumption and specific adverse health outcomes if effective prevention programs are to be developed and supported.

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Abortion Surveillance: Preliminary Analysis—United States, 1982-1983

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Introduction

In 1969, the Division of Reproductive Health, Center for Health Promotion and Education, CDC, initiated ongoing epidemiologic surveillance of abortion in the United States. The objectives of this surveillance are twofold: 1) to document the numbers and characteristics of women obtaining abortion and 2) to assist in efforts to eliminate preventable morbidity and mortality associated with abortion. This report is a preliminary analysis of legal abortions reported to CDC for the years 1982 and 1983. The number of states reporting specific abortion characteristics varies each year; therefore, temporal trends based on these summary data should be interpreted with caution.

Numbers and Characteristics of Women Obtaining Abortions

In 1983—for the first time since 1969, when CDC began abortion surveillance—the total number of legal abortions, the rate per 1,000 females 15-44 years of age, and the ratio per 1,000 live births all declined in comparison with reported values for the previous year.

The number of legal abortions reported to CDC from the 50 states and the District of Columbia increased from 1,300,760 in 1981 to 1,303,980 in 1982 and decreased to 1,268,987 in 1983 (Table 1). This 2.7% decrease in 1983 was preceded by a continuous decline in the percent increase in the reported number of legal abortions since 1976 (*1*). The increase between 1976 and 1977 was 9.2%, compared with a 0.25% increase from 1981 to 1982.

The national abortion ratio continued to decrease from a high of 359 legal abortions per 1,000 live births in 1980 to 358 in 1981, 354 in 1982, and 349 in 1983. The national abortion rate of 24 legal abortions per 1,000 women 15-44 years of age for 1981 and 1982 was less than it had been the previous year, and it dropped to 23 in 1983.

In 1982 and 1983, as in previous years, women obtaining abortions tended to be young, white, and unmarried, and to have had no live births. In 1982, 62.2% of women obtaining legal abortions were under 25 years of age, 68.5% were white, 78.0% were unmarried, and 57.8% had had no live births. In 1983, 61.8% were under 25 years of age, 67.6% were white, 78.6% were unmarried, and 57.1% had had no live births.

Examination of the national abortion surveillance system for 1982 and 1983 suggests that the reported lower abortion ratios and abortion rates reflect real phenomena rather than being artifacts of changes in the completeness of reporting. For 1982, in 25 reporting areas, the number of abortions exceeded the number reported for 1981; for 27 areas, fewer abortions were reported than for 1981. For 1983, in 14 areas the number of abortions exceeded the number reported for 1982; in 36 areas, fewer abortions were reported than for 1982; in two areas there was no change in the reported numbers. The sources of abortion data were identical in 1982 and 1983.

TABLE 1. Characteristics of women obtaining abortions, United States, selected years

Characteristics	1972	1976	1980	1981	1982	1983
Reported Number of Legal Abortions	586,760	988,267	1,297,606	1,300,760	1,303,980	1,268,987
Ratio*	180.1	312.0	359.2	358.4	354.3	348.7
Rate†	13	21	25	24	24	23
			Percentage Distribution§			
Age (years)						
≤ 19	32.6	32.1	29.2	28.0	27.1	27.1
20-24	32.5	33.3	35.5	35.3	35.1	34.7
≥ 25	34.9	34.6	35.3	36.7	37.8	38.2
Race						
White	77.0	66.6	69.9	69.9	68.5	67.6
Black and other	23.0	33.4	30.1	30.1	31.5	32.4
Marital Status						
Married	29.7	24.6	23.1	22.1	22.0	21.4
Unmarried	70.3	75.4	76.9	77.9	78.0	78.6
Number of Live Births‖						
0	49.4	47.7	58.4	58.3	57.8	57.1
1	18.2	20.7	19.5	19.7	20.3	20.7
2	13.3	15.4	13.7	13.7	13.9	14.2
3	8.7	8.3	5.3	5.3	5.1	5.2
≥ 4	10.4	7.9	3.2	3.0	2.9	2.8
Type of Procedure						
Curettage	88.6	92.3	95.5	96.1	96.4	96.8
Suction curettage	*65.2*	*82.6*	*89.8*	*90.4*	*90.6*	*91.1*
Sharp curettage	*23.4*	*10.2*	*5.7*	*5.7*	*5.8*	*5.7*
Intrauterine instillation	10.4	6.0	3.1	2.8	2.5	2.1
Hysterotomy/ hysterectomy	0.6	0.2	0.1	0.1	0.0¶	0.0¶
Other	0.5	0.9	1.3	1.0	1.0	1.1
Weeks of Gestation						
≤ 8	34.0	47.0	51.7	51.2	50.6	49.7
9-10	30.7	28.0	26.2	26.8	26.7	26.8
11-12	17.5	14.4	12.2	12.1	12.4	12.8
13-15	8.4	4.5	5.2	5.2	5.3	5.8
16-20	8.2	5.1	3.9	3.7	3.9	3.9
≥ 21	1.3	0.9	0.9	1.0	1.1	1.0

*Abortions per 1,000 live births

†Abortions per 1,000 females 15-44 years of age

§Excludes unknowns. Since the number of states reporting each characteristic varies from year to year, temporal comparisons should be made with caution

‖For years 1972 and 1976, data indicate number of living children

¶<0.05%

Methods of Abortion

As in previous years, curettage continued to be the primary method of abortion. It accounted for a higher proportion in 1982 and 1983 than in previous years, whereas lower proportions of abortions were performed by instillation, hysterectomy, and hysterotomy.

In both 1982 and 1983, approximately 96% of all legal abortions were done by curettage, whereas approximately 2% were done by instillation, and less than 0.05% were done by hysterectomy and hysterotomy. About half of the legal abortions were performed in the first 8 weeks of gestation, and approximately 90% were done during the first 12 weeks of gestation.

Abortion-Related Mortality

CDC investigates all reports of abortion-related deaths. Late reports of confirmed abortion-related deaths are used to update data from previous years. Past experience shows that 64% of abortion-related deaths are identified and investigated within 12 months of the death and 96% within 3 years.

The number of legal-abortion-related deaths increased from seven in 1981 to 11 in 1982. The legal-abortion-related mortality rate in 1982 was also higher than that in 1981. The death-to-case rate for legal abortion in 1982 was 0.8 per 100,000, compared with 0.5 in 1981. The death-to-case rate has been generally decreasing since 1972, the year CDC began abortion mortality surveillance. However, increases in the abortion-related mortality rate have occurred twice previously—in 1977 (17 deaths, or 1.6 deaths per 100,000 abortions, in 1977, compared with 11 deaths, or 1.1 deaths per 100,000 abortions, in 1976) and in 1979 (18 deaths, or 1.4 deaths per 100,000 abortions, in 1979, compared with nine deaths, or 0.8 deaths per 100,000 abortions, in 1978).

Mortality data for 1983 are not presented in this report, since they may not be complete.

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Trichinosis Surveillance, 1984

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Introduction

Trichinosis, infection with *Trichinella spiralis*, continues to be a public health problem in the United States. Although fewer than 100 cases a year are now being reported, many mild or asymptomatic infections are undetected or misdiagnosed unless they are related epidemiologically to more severe cases (*1*). We believe that the reported cases represent only a fraction of the total number of cases that occur each year. With a stable surveillance system, however, cases that are reported can be useful in monitoring trends in the incidence of the disease, in initiating outbreak investigations, and in identifying groups at high risk for the infection.

Materials and Methods

State health departments report new cases of trichinosis by week to the National Morbidity Reporting Service. Supplemental epidemiologic information is submitted by the reporting state on Surveillance Case Report forms (CDC 54.7—Rev.7-81) to the Division of Parasitic Diseases (DPD), Center for Infectious Diseases (CID), CDC. Additional cases are identified through reported results of trichinosis serologic tests performed by the Helminthic Diseases Branch, DPD, CID, CDC, and through investigations conducted by the DPD staff.

Criteria for inclusion as a case:

1. *Trichinella*-positive muscle biopsy with clinical symptoms compatible with trichinosis (including eosinophilia, fever, myalgia, and periorbital edema),
2. Positive serologic test for trichinosis, or
3. Compatible symptoms (as above) in a patient with a history of ingesting meat known to contain *Trichinella* larvae.

Cases reported by the states but not characterized by written surveillance reports or not fitting the case definition are not included in this report.

Results

In 1984, 65 cases of trichinosis were reported to CDC. Thirteen states reported at least one case; however, 75% of the cases occurred in five states (California, Connecticut, Massachusetts, New Jersey, and Texas), and over 60% of the cases occurred in the Middle Atlantic and New England states (Table 1). For the third year in a row, New Jersey reported the largest number of cases. The states with the highest 5-year mean trichinosis incidence for the period 1980-1984 were Alaska (11.0 cases/million population), Rhode Island (7.8), Connecticut (3.9), New Jersey (2.7), and Vermont (2.0). Moderately high mean incidence was reported in Hawaii (1.5), Louisiana (1.3), and Massachusetts (1.2). No cases were reported in the 5-year period in Alabama, Arizona, Arkansas, Florida, Georgia, Iowa, Kentucky, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Carolina,

South Dakota, Tennessee, Wisconsin, and Wyoming. The remaining states reported between 0.1 and 1.0 case/million population.

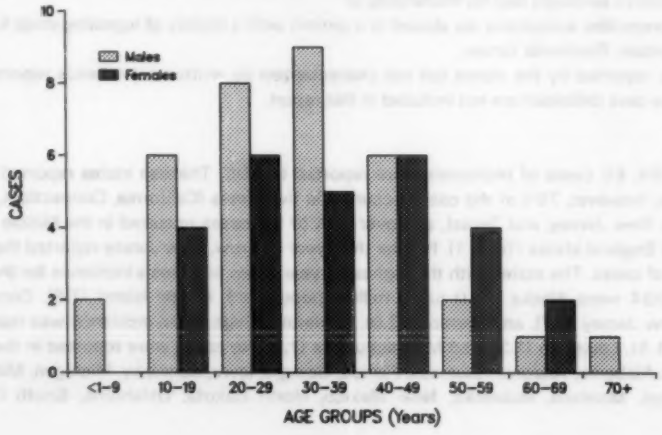
Of the 65 cases reported in 1984, 56.9% occurred in males and 43.1% in females. The mean age of patients was 34.2 years, with a range of 3-73 years. The age distribution by sex was similar (Figure 1).

The only consistent seasonal pattern for trichinosis in the United States has been a peak in December and January, related to consumption of homemade pork sausage during the Christmas holidays. Although a similar holiday peak was not evident in 1984, 12 cases reported in May were associated with kielbasa (Polish sausage) prepared by a Hungarian club for Easter (Figure 2).

TABLE 1. Trichinosis cases, by state, United States, 1984

State	Cases	(%)	Rate per million population
Alaska	3	(4.6)	7.5
California	8	(12.3)	0.3
Connecticut	7	(10.8)	2.3
Hawaii	1	(1.5)	1.0
Maine	1	(1.5)	0.9
Massachusetts	6	(9.3)	1.0
New Jersey	17	(26.2)	2.3
New York	4	(6.2)	0.2
North Carolina	1	(1.5)	0.2
Pennsylvania	4	(6.2)	0.3
Texas	11	(16.9)	0.7
Utah	1	(1.5)	0.7
Virginia	1	(1.5)	0.2
Total	65	(100.0)	

FIGURE 1. Trichinosis cases, by age group and sex, United States, 1984



All but four of the patients reported at least one of the common signs and symptoms of trichinosis: 92.6% had fever (50 of the 54 persons for whom this symptom was known), 74.5% (41/55) had periorbital edema, 96.3% (52/54) had myalgia, and 95.9% (47/49) had eosinophilia. Most of the patients recovered; however, one patient died, and the outcomes for six were unknown.

The mean incubation period for the 29 cases for which the dates of consumption of incriminated meat and onset of symptoms were available was 8.1 days and ranged from 1 to 34 days. Diagnosis of trichinosis was confirmed by serologic tests in 34 cases (97.1% of those in which serologic testing was done). Muscle biopsy was performed on 22 patients, and in 19 (86.4%) instances the results were positive.

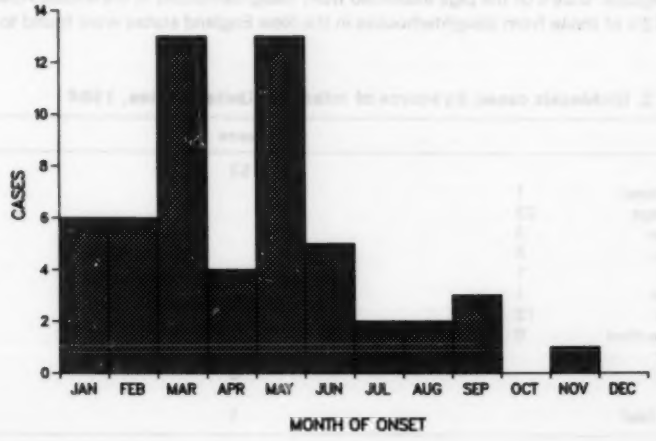
The infective meat item was identified in 60 of 65 cases; however, in only 18 cases (of which 12 were from the same outbreak) was the suspected food item examined for *Trichinella* larvae. All items were positive. Pork was incriminated in 53 (88.3%) of the cases and bear meat in six (10%). Sausage was the form of pork most frequently implicated (48.9%) (Table 2).

The method of meat preparation was identified in 50 cases; in 18 (36%) of these the meat was eaten raw, in 10 (20%) it was boiled, in seven (14%) it was roasted on an open fire, and in six (12%) it was fried. In the remaining nine cases, various methods of preparation were used. In 22 cases (40% of those in which a source was reported) the implicated meat was obtained from a supermarket, butcher shop, or other commercial outlet. In 11 (20%) cases it was obtained directly from the farm, and in seven (12.7%) the meat (feral swine and bear) was obtained through hunting.

Common-Source Outbreaks

Eight common-source outbreaks involving 40 people were reported to CDC in 1984. Two of the larger outbreaks were investigated thoroughly. The first involved a community of Laotians living in Amarillo, Texas. During March and April, 12 individuals from five unrelated

FIGURE 2. Trichinosis cases, by month of onset, United States, 1984



households developed symptoms of trichinosis after eating pork from pigs purchased separately from a small local pig farm. In six cases the diagnosis was confirmed by serologic testing. Five persons were hospitalized; they all recovered. Pork from the pigs was unavailable for examination, and investigation of the farm was unrevealing (*2*).

The second outbreak occurred in New Jersey after the sale of kielbasa made by a local Hungarian club for Easter. Of the 44 individuals exposed to the pork, 12 developed symptoms suggestive of trichinosis. The consumption of raw pork was associated with a relative risk of 5.7. Two patients were hospitalized, and one developed cardiac and neurologic complications. Examination of samples of the sausage revealed *Trichinella* larvae. In addition to the persons who ate kielbasa made by the club, five persons who purchased kielbasa from another source developed symptoms of trichinosis. Investigation revealed that the pork used to make the second kielbasa was obtained from the same meat-packing company as the pork used in the kielbasa sold by the club.

Discussion

In 1983, only 30 cases of trichinosis were reported in the United States, by far the fewest ever recorded (*3*). In 1984, more than twice as many cases were reported; there was one death. No apparent change in the surveillance system could account for this increase in cases. The increase may have been due in part to the large number of common-source outbreaks. In previous years, the majority of cases were associated with common sources, with years of peak incidence, such as 1969 and 1975, coinciding with an unusually large number of such cases (*4*). In 1983, only six cases were associated with common sources, compared with the 40 reported in 1984. No doubt, outbreak investigations allow for the detection and diagnosis of cases that would go undiagnosed and therefore unreported if they occurred as individual cases.

As in previous years, a large number of the reported cases occurred in the Middle Atlantic and New England states, a finding that has been associated with high concentrations of ethnic groups whose culinary preferences include raw pork (*5*). However, recent studies of selected slaughterhouses have revealed the widespread occurrence of infection in swine in these regions: 0.58% of the pigs examined from slaughterhouses in the Middle Atlantic states and 0.73% of those from slaughterhouses in the New England states were found to be infect-

TABLE 2. Trichinosis cases, by source of infection, United States, 1984

Food		Cases	(%)
Pork		53	(88.3)
Wild boar	1		
Sausage	23		
Chops	3		
Roast	6		
Ham	1		
Bacon	1		
Other	12		
Unspecified	6		
Bear		6	(10.0)
Ground beef		1	(1.7)

ed with *Trichinella* (*6,7*), surpassing the national estimate of 0.1% (*8*). These findings were attributed to the swine management practices of the small and/or part-time hog producers commonly found in these regions. The relative importance of these findings, in the light of culinary preferences of ethnic groups in these areas, needs further investigation.

Although the number of reported cases of trichinosis in the United States has decreased dramatically, trichinosis surveillance continues to be of interest. Specific subpopulations are at an increased risk for infection with trichinosis, traditionally Eastern European groups such as those of Italian, German, and Polish descent. As a result of trichinosis surveillance activities, Southeast Asian immigrants have been found to be a high-risk group, and public health measures have been directed accordingly. In addition, new cases of trichinosis in humans have been an impetus for action by the National Pork Producers Council to develop a national strategy for the control of trichinosis in swine.

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The National Occupational Health Survey of Mining

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Introduction

Surveillance for occupational safety and health problems has historically lagged behind that for infectious diseases. Adequate surveillance methods are essential in assessing the scope of health problems and in assigning priorities for intervention strategies; therefore, in recent years the National Institute for Occupational Safety and Health (NIOSH) has placed heavy emphasis on upgrading occupational health surveillance. Since direct surveillance of exposed workers has been shown to be a useful way to assess the prevalence of disease and to monitor trends, in 1984 NIOSH began an extensive survey of potential occupational exposures found at mine sites in the United States.

The National Occupational Health Survey of Mining (NOHSM) is similar to the National Occupational Hazard Survey that NIOSH conducted during 1972-1974 and the follow-up National Occupational Exposure Survey conducted during 1981-1982, both of which, however, involved only general-industry worksites. NOHSM not only will identify potential exposures related to occupational lung diseases, which head the NIOSH list of 10 leading work-related diseases and injuries (*1*), but also will identify potential exposures that may lead to other conditions on the list. The present plans for NOHSM call for five segments of mine surveys, to last approximately 1 year each, with an expected completion date of 1989. This report describes the purposes of NOHSM and the methods used. Results will be published in subsequent articles, as they become available.

NOHSM was developed in response to the U.S. Federal Mine Safety and Health Amendment Act of 1977, which requires the Secretary of Health, Education, and Welfare (now Health and Human Services) to "determine for each toxic material or harmful physical agent . . . used or found in a mine . . . whether such material or agent is potentially toxic at the concentrations in which it is used or found in a mine." As the lead federal agency for research in occupational safety and health, NIOSH was assigned responsibility for making this determination. To comply with the 1977 Act, NIOSH began in 1978 a review of information collected by several agencies (primarily the Mine Safety and Health Administration [MSHA]) on potentially toxic substances that exist on U.S. mine properties. It issued a report in 1979 showing a ". . . paucity of exposure data for certain agents, and the absence of comprehensive information on the many substances used or found in mines." As a result, NIOSH began planning for an in-depth survey of all substances found on mine properties. The study design was developed in the period 1980-1983, and NOHSM was approved for field work in March 1984.

Data from NOHSM will be used primarily to supply MSHA with information for 1) setting regulatory priorities and writing improved health standards, 2) improving compliance with existing standards, and 3) identifying research needs and priorities. NIOSH will also use the data to set priorities for its mining-related research and to provide supporting information for specific mining-related NIOSH projects. Other interested parties, including government agen-

cies, universities, labor unions, and individual workers, are expected to request ingredient information for trade-name products found in the mining industry, along with supporting information for research efforts, compensation claims, and the instruction of students. With the exception of trade secrets, NIOSH will provide the data requested.

Survey Design and Sample Selection

The mining industry consists of specific mines and mills that produce commodities (e.g., asbestos, coal, potash) or carry out processes (e.g., crushing, breaking). NIOSH accepts the commodity or process designation that MSHA has established for each mine or mill. NOHSM will consist of a series of segments, each approximately 1 year in duration, with a different set of commodities to be studied in each segment. The five segments now planned will enable researchers to estimate 1) the number of miners potentially exposed to health hazards, 2) the number of mines with health hazards and with various occupational health facilities, and 3) the number of such health hazards and health facilities, arranged by Standard Industrial Classification and by other domains to be selected after the survey is completed.

Mines to be surveyed as a part of NOHSM are selected from a list of all mines that report quarterly to MSHA. Selection is based on average yearly employment, Standard Industrial Classification code, geographic area, and current activity in the mining of specified commodities. The 72 commodities to be studied in NOHSM are divided into 103 geographic strata based on differences in mineral composition and mining methods. Commodities surveyed in the first segment are listed in Table 1; those being surveyed in the second segment are shown in Table 2.

TABLE 1. Commodities* surveyed in the first segment of the National Occupational Health Survey of Mining

Aluminum/alumina	Metal ores†
Aplite	Nonmetal minerals†
Asbestos	Perlite
Beryl	Potash
Boron minerals	Rare earths
Gemstones	Salt (evaporated)
Gilsonite	Salt (rock)
Gypsum	Sandstone (crushed and broken)
Leonardite	Silver
Lode, placer gold	Sodium compounds
Magnesite	Trona
Mercury	Vermiculite

*Commodity terminology of the Mine Safety and Health Administration
†Not elsewhere classified

TABLE 2. Commodities* being surveyed in the second segment of the National Occupational Health Survey of Mining

Coal (bituminous)	Slate, crushed and broken
Clay	Slate, dimension
Granite, crushed and broken	Stone, crushed and broken†
Granite, dimension	Stone, dimension†
Manganese	

*Commodity terminology of the Mine Safety and Health Administration
†Not elsewhere classified

Mines are selected according to two categories: 1) self-representing units for which the data collected will apply only to the individual mine and 2) probability samples for which the data may be projected to other similar mine sites. A site is designated as a self-representing unit if it 1) is one of the three largest mines or mills in the stratum, 2) has large employment relative to the rest of the stratum, or 3) is one of only a small number of mines in that stratum. Probability samples are selected to represent a given percentage of each stratum, with the probability of selection being proportional to the number of workers. Objective rules govern the selection process for probability samples to ensure that the samples are representative.

Field Protocol

Field activities for NOHSM are carried out by a team of six surveyors; normally each site visit is conducted by one surveyor. The initial six surveyors included three mining engineers, one mineral-processing engineer, and two industrial hygienists; the current team is composed of four mining engineers, one chemical engineer, and one industrial hygienist. Surveyors travel 100% of their duty time, and an office-support staff of three full-time and several part-time employees is based at the Appalachian Laboratory for Occupational Safety and Health (ALOSH) in Morgantown, West Virginia.

After each site is selected from the MSHA list, its management is contacted by telephone to verify that the mine is active and that the commodity designation is correct. A letter of notification of selection for NOHSM is then sent to the management of the mine and to the official miners' representative who is registered with MSHA. The survey is usually scheduled 1-2 months after notification. Surveyors are responsible for scheduling the surveys, and whenever possible they do this at a time mutually agreeable to NIOSH and to the mine management. Once a starting date has been established, NIOSH sends letters announcing plans for the survey to the management at the mine site, any corporate headquarters, the miners' representative, MSHA, the Bureau of Mines, appropriate state agencies, and the NIOSH Regional Offices.

Each site survey includes a questionnaire and walk-through observations. The questionnaire, which takes about 30 minutes to complete, is designed to record information on a company's occupational health practices and to include related descriptive information. The walk-through survey takes place in two phases: an inventory and a worksite survey. For the inventory, the surveyor examines centralized storage areas on the property and identifies every health-related trade-name product and generic chemical present. This includes potentially hazardous products such as mill reagents, fuels, lubricants, paints, cleaning agents, and welding rods. The surveyor must record the exact name of each product as labeled and the supplier's name and address, as well as the mine management's best estimate of the amount of the product used during the preceding 12 months. Products found on the site but not used during this period are recorded as having zero usage. For the worksite survey, the surveyor observes every worksite on the mine property and all activities of the workers to determine any health-related potential exposures. In addition to recording the toxic agents suggested above, the surveyor also records potential exposures to welding and combustion products, metals, dusts, excessive noise, musculoskeletal overloads, and a variety of ergonomic factors. For each potential exposure, the surveyor must determine its relative duration, the controls intended for that agent, and the associated number of employees by sex. This is strictly an observational exercise, and the term "potential exposure" is used to indicate that an agent is present but that NIOSH has not documented its level with any environmental monitoring technique.

After each survey, the surveyor codes the observations in a precise format and sends the coded data to ALOSH for computer processing and the generation of reports. At ALOSH, each set of survey data received from the field is keyed to magnetic tape, which is electronically edited to be sure that the data have been properly formatted. The computer editing also checks the chemicals mentioned in the survey data against a glossary of acceptable chemical names. Any chemical that does not match is referred to a chemist who determines whether the entry is a new chemical, a synonym for an acceptable chemical name, or a trade name that was improperly reported as a generic chemical.

Reporting the NOHSM Data

NIOSH is required by regulation to provide reports to each facility that it surveys. For NOHSM, NIOSH reports to each facility on the responses to the questionnaire and on the inventory of substances found on the property. The mine operator reviews this report for technical errors and for the inadvertent inclusion of confidential information. Later, when trade-name substances identified during the NOHSM surveys have been resolved into their associated chemical ingredients, the ingredients of trade-name substances that have not been declared trade secrets by their manufacturers will be available to the public.

After a commodity has been surveyed, NIOSH prepares a report that describes certain occupational health-related aspects of that commodity. The information is divided into several categories of potential exposures: chemicals with and without MSHA regulations and/or NIOSH-recommended exposure limits, trade-name products, physical agents, musculoskeletal overload conditions, and potential exposures from welding. The information is then presented in tabular form for each of these categories, giving the number of workers potentially exposed (both observed and predicted), the percentage of workers potentially exposed, the predicted annual usage of the product, the occupations of the workers exposed, and the locations in the facilities where exposure may occur.

NIOSH also plans to develop its capability of responding to special requests for analyses of NOHSM data. Experience with other data bases has shown that maximum speed and flexibility are essential elements of an efficient analytic and reporting system. Wherever possible, the system of NOHSM information will be combined with other mine-related information to provide a comprehensive reporting system.

Limitations of the NOHSM Data

The following limitations of the NOHSM data must be recognized: 1) The worksite data indicate only potential exposures. Thus, the agent may be observed at one or more sites in the facility, presenting the possibility that workers would be exposed to it. 2) Usage data are based on estimates provided by the mine management and should serve only as guides to the projected magnitude of usage rather than as precise information. Such estimates are expected to vary widely in accuracy. 3) The terminology relating to commodity, occupation, operation, and location was adapted directly from information that MSHA supplied to NIOSH. This terminology is not necessarily applied or accepted by others. 4) Mine operators have the right to specify which information they wish to have protected as trade secrets. For this reason, all NOHSM data that NIOSH reports to the public must be devoid of identifiable trade secrets. 5) NOHSM data are an indication of health-related conditions only at the time of the survey itself. No changes made by mine operators after the survey will be reflected in the data.

Observations from the First Segment

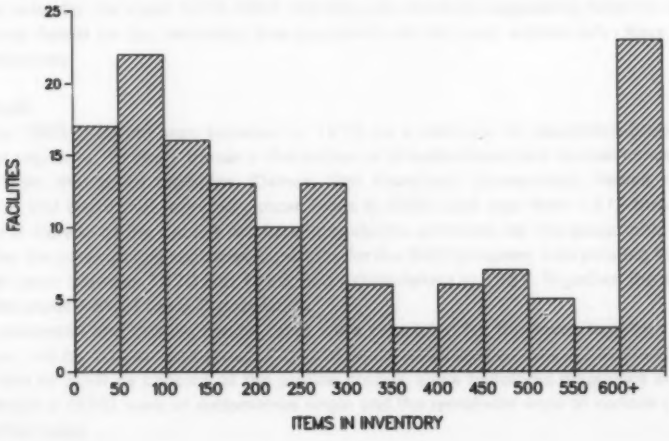
The first segment of NOHSM was concluded in September 1985. By October 28, 1985, 102 site reports either had been approved by the respective mine operators or were being reviewed by them. Although compilation of the findings is not yet complete, some descriptive information is available.

The number of trade-name products and chemical substances inventoried per site varies from fewer than 50 to more than 600 (Figure 1). Further analysis of the data may show this to be a function of the size of the site and/or the complexity of the operation carried out there. The current estimate of 35,000 products inventoried in this segment includes multiple listings of some products if they are found at more than one site; these duplicates are now being identified. An estimated 38% of the products inventoried were reported by mine management as not having been used during the previous 12 months. This high percentage was unexpected and is responsible, in part, for a longer survey time per site than had been predicted; the average survey time was 34 hours, compared with an expected time of 16 hours. Efforts to reduce the time required for surveys include the use of checklists, where feasible, and the omission of some zero-use products.

Follow-Up to NOHSM

Data derived from NOHSM will not completely meet the requirement of the Federal Mine Safety and Health Amendment Act of 1977 that levels of health-related agents be determined. Thus, once NIOSH learns from NOHSM which agents are present, follow-up work must begin that will identify monitoring strategies to yield the associated environmental levels. A complete study, of course, requires that the levels of all toxic agents be measured, including those that may not be visible, such as radon daughters and carbon monoxide.

FIGURE 1. Inventory of potentially hazardous products at mining facilities surveyed, United States, May 1984-September 1985



The Act also requires that information be gathered on a continuing basis. If NOHSM is to be a viable source of data in years to come, NIOSH will need an efficient mechanism for updating the NOHSM information, because it reflects conditions that existed only at the time of the survey.

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Trends in the Incidence of Endometrial and Ovarian Cancers

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Introduction

In the mid-1970s, a marked increase in the incidence of endometrial cancer occurred in the United States. After epidemiologic studies showed a strong association between the use of estrogen and the risk of endometrial cancer in postmenopausal women, the number of prescriptions for estrogen declined, and the number of new endometrial cancer cases decreased (*1,2*). In 1980, Jick et al. termed this episode "one of the largest epidemics of serious iatrogenic disease that has ever occurred in this country" and observed that ongoing surveillance could have detected the epidemic several years earlier (*1*).

Although no consistent association has been found between estrogen replacement therapy and risk of ovarian cancer (*3*), epidemiologic studies have suggested that the use of oral contraceptives reduces the risk of developing both ovarian and endometrial cancer (*4,5*). As women who have used oral contraceptives move into those age groups most likely to use estrogen replacement therapy—the age groups also at highest risk of developing endometrial or ovarian cancer—it is important to continue monitoring the incidence of these cancers.

For this report, we used data from the Surveillance, Epidemiology, and End Results (SEER) program (*6*) of the National Cancer Institute to calculate age-specific endometrial and ovarian cancer rates for the years 1973-1981. We also calculated corresponding rates for endometrial cancer based on the estimated true population at risk—i.e., women who have not had a hysterectomy.

Methods

The SEER program was founded in 1973 as a network of population-based regional cancer registries. To study trends in the incidence of endometrial and ovarian cancer, we used data from the seven registries (Detroit, San Francisco, Connecticut, Hawaii, Iowa, New Mexico, and Utah) that reported cancer cases to SEER each year from 1973 through 1981. The U.S. Bureau of the Census produced population estimates for the geographic areas covered by the participating registries especially for the SEER program, interpolating for the intercensal years between 1970 and 1980, and extrapolating to 1981. Together, the seven areas include about 7.5% of the U.S. population.

Endometrial and ovarian cancer rates were calculated for the seven registries combined, by year and by 10-year age group. Cases of endometrial cancer were considered to be those reported to SEER as cancers of the uterine corpus, since histologic diagnoses showed that the majority (83%) were of endometrial origin and the remainder were of various other or unspecified types.

No estimates of the national prevalence of hysterectomy in women beyond reproductive age have been reported since the early 1960s; therefore, we modified a method originally outlined by Lyon and Gardner to estimate the true population at risk of endometrial cancer (*7*). For a baseline, we used the proportion of women with an intact uterus in 1970, as estimated by Lyon and Gardner and refined by Marrett (*8*), interpolating to obtain estimates by single year of age. We then calculated hysterectomy incidence by single year of age for the years 1970-1980, using weighted data from the National Center for Health Statistics Hospital Discharge Survey and national population estimates (*9*). To estimate the population at risk of endometrial cancer by age in any given year, we calculated cumulative rates and applied them to SEER population data. These data, grouped into 10-year age intervals, provided the denominators for age-specific endometrial cancer rates based on the estimated true population at risk.

Results

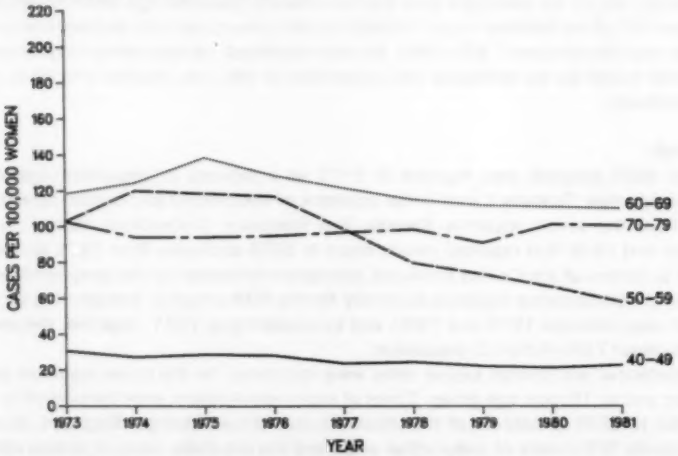
After reaching a peak in the mid-1970s, the incidence of endometrial cancer among women 50-69 years of age declined (Figure 1). During the same period, incidence of this cancer also declined among women younger than 50 years of age and remained essentially unchanged among women 70 years old and older (Table 1). Rates based on the estimated true population at risk (i.e., women with intact uteri) were higher, but overall trends were similar (Figure 2).

Between 1973 and 1981, the age-specific incidence of ovarian cancer changed very little (Table 2). No increasing trend was seen in any age group.

Discussion

In the mid-1970s, the recognition that estrogen replacement therapy was associated with endometrial cancer led to a change in physicians' prescribing practices; a reduction in endo-

FIGURE 1. Incidence of cancer of the uterine corpus, by age group and year, SEER (seven registries*), United States, 1973-1981



*Detroit, San Francisco, Connecticut, Hawaii, Iowa, New Mexico, Utah

metrial cancer incidence followed within a few years. Recently, prescriptions for noncontraceptive estrogens have increased, but at lower doses and often in combination with progestins (*10*)—regimens thought to mitigate the associated risk of endometrial cancer (*11*). Ongoing surveillance will show whether the incidence of this cancer continues to decline.

Case-control studies have shown that a history of using oral contraceptives is associated with a reduced risk of developing endometrial and ovarian cancer. The growing proportion of "ever-users" of oral contraceptives in the age groups at highest risk should result in a decline in the incidence of both of these cancers. In 1981, some of the women who used oral contraceptives when they first became available in the 1960s had reached the 50- to 59-year age group; in contrast, women in the 60- to 69-year age group were unlikely to have ever used

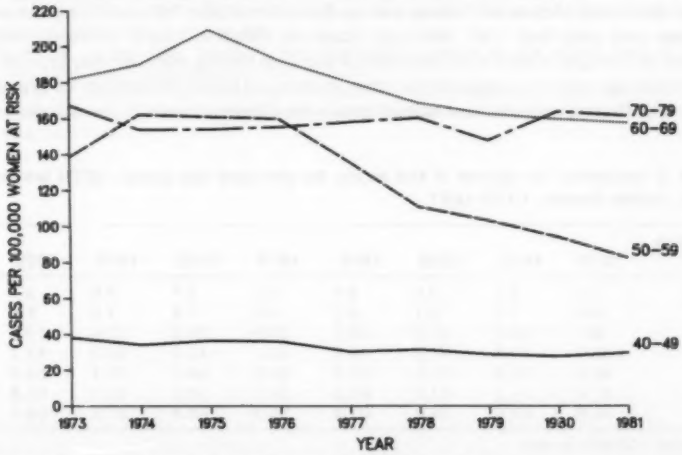
TABLE 1. Incidence* of cancer of the uterine corpus, by year and age group, SEER (seven registries†), United States, 1973-1981

Age group (years)	1973	1974	1975	1976	1977	1978	1979	1980	1981
20-29	1.2	1.3	0.7	0.8	0.9	0.9	0.8	0.7	0.4
30-39	6.7	5.5	6.1	5.6	5.2	5.9	4.8	4.4	5.6
40-49	30.7	27.3	28.9	28.3	23.8	24.6	22.4	21.6	23.0
50-59	102.9	120.1	118.6	116.9	98.6	79.7	73.6	66.5	58.1
60-69	118.4	124.5	138.5	128.5	121.7	115.2	112.0	111.1	110.3
70-79	102.6	94.1	94.1	94.9	96.8	98.5	91.1	101.5	100.7
≥ 80	46.9	57.1	65.9	70.6	66.2	83.5	66.3	66.2	66.1

*Cases per 100,000 women

†Detroit, San Francisco, Connecticut, Hawaii, Iowa, New Mexico, Utah

FIGURE 2. Incidence of cancer of the uterine corpus in women with intact uteri, by age group and year, SEER (seven registries*) ,United States, 1973-1981



*Detroit, San Francisco, Connecticut, Hawaii, Iowa, New Mexico, Utah

oral contraceptives. Although the data presented indicate that endometrial cancer incidence continues to decline more rapidly among women in their 5Cs than among older women, this finding could well reflect different rates of exposure to noncontraceptive estrogens among women in these age groups.

The lack of national data on hysterectomy prevalence complicates the estimation of endometrial cancer rates based on the population truly at risk. The incidence of hysterectomy leveled off after increasing rapidly in the early 1970s (*12,13*); however, the age-specific prevalence of hysterectomy did not change enough between 1973 and 1981 to distort overall trends in endometrial cancer incidence.

Hysterectomy rates vary considerably by geographic region, being highest in the South and lowest in the Northeast (*13*). Thus, the proportion of the population at risk of endometrial cancer is likely to differ among the seven SEER areas included in this report. A survey in New York State (*14*) showed a lower prevalence of hysterectomy among women <40 years of age and among women 70-74 years of age than would be predicted by the model proposed by Lyon and Gardner. Estimates of hysterectomy prevalence would be preferable to those derived from an incidence-based model, which necessarily propagates errors in estimated hysterectomy incidence for any one year to all succeeding years.

Adequate data on prevalence of bilateral oophorectomy are not currently available. We expect that ovarian cancer rates based on the true population at risk would be higher than those shown; however, the differences should be somewhat less than those for endometrial cancer, since an estimated 30%-50% fewer women have undergone bilateral oophorectomy than hysterectomy (*13,14*).

Age-specific estimates of the prevalence of hysterectomy, as well as oophorectomy, will be available from data collected in the first phase of the National Health and Nutrition Examination Survey I—Epidemiologic Followup Survey (NHANES I—EFS), conducted by the National Center for Health Statistics between 1982 and 1984 (*15*). This survey combined information from questionnaires and medical records of women who were 25-74 years old when interviewed for NHANES I in 1971-1975.

The usefulness of data on incidence as well as on mortality for monitoring cancer trends has been well described (*16*). Although observed trends in cancer incidence may be influenced by changes in diagnostic procedures and case finding, they still may provide support for etiologic associations suggested by other studies and reflect changes in the prevalence of risk factors. Cohort analyses have helped isolate the effects of some of these factors in coun-

TABLE 2. Incidence* of cancer of the ovary, by year and age group, SEER (seven registries†), United States, 1973-1981

Age group (years)	1973	1974	1975	1976	1977	1978	1979	1980	1981
20-29	2.2	3.1	2.8	3.1	3.2	3.4	3.5	3.7	3.3
30-39	6.4	7.9	6.7	6.2	6.6	7.6	7.2	5.9	7.5
40-49	18.7	23.2	25.8	22.3	23.9	20.3	22.4	19.8	20.3
50-59	36.7	44.8	41.8	44.5	43.4	42.9	38.2	42.2	38.7
60-69	45.6	55.3	57.9	53.2	53.9	54.0	55.7	54.6	56.4
70-79	51.6	61.9	61.3	60.3	56.7	59.6	62.1	62.8	62.7
≥ 80	46.9	41.8	54.4	61.4	55.3	56.4	51.3	58.2	58.7

*Cases per 100,000 women

†Detroit, San Francisco, Connecticut, Hawaii, Iowa, New Mexico, Utah

tries where cancer surveillance has been under way for several decades (*17,18*). Such analyses may prove useful as surveillance under the SEER program continues.

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Ectopic Pregnancy in the United States, 1970-1983

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Introduction

In 1983, approximately 70,000 women were hospitalized for ectopic pregnancy in the United States (*1*). This represents a major public health problem in terms of fetal loss, the financial cost of caring for those women, and hundreds of thousands of workdays lost during hospitalization and rehabilitation of primarily healthy, young women. Furthermore, although it is a relatively rare complication of pregnancy (1.4% of all pregnancies in 1983), ectopic pregnancy accounted for 12.8% of all maternal deaths in the United States in 1983 (*1,2*). The second leading cause of pregnancy-related death (after toxemia), ectopic pregnancy was the leading cause of maternal deaths during the first trimester.

CDC has previously reported data on ectopic pregnancy for 1970-1980 (*3-5*). This report updates that information to include data for 1981-1983.

Methods

The estimated number of ectopic pregnancies was based on the National Hospital Discharge Survey (NHDS), conducted by the National Center for Health Statistics (NCHS). Each year, NCHS estimates the number of ectopic pregnancies nationwide by using a systematic sample of medical records (approximately 200,000) of patients discharged from about 400 nonfederal short-stay hospitals in the 50 states and the District of Columbia. The sample was stratified to represent all discharges from U.S. short-stay hospitals with respect to hospital size, type of ownership, and geographic location. For 1970-1978, abstracts with diagnosis code 631 according to the International Classification of Diseases, 8th Revision, Adapted for Use in the United States (ICDA-8) (*6*) were reported; for 1979-1983, abstracts with diagnosis code 633 according to the ICDA, 9th Revision (ICDA-9) (*7*) were reported. Data on deaths from ectopic pregnancy were based on U.S. vital statistics collected by NCHS. Ectopic pregnancy rates were calculated by dividing the estimated number of ectopic pregnancies by the reported number of pregnancies. Pregnancies were defined as the sum of live births, legally induced abortions, and ectopic pregnancies. The number of live births was obtained from NCHS, and the number of legally induced abortions was obtained from CDC's abortion surveillance data.

The geographic regions used in this report are those defined by the U.S. Bureau of the Census. Women were racially categorized as "white" or "black," with black including all races other than white. When information on race was not included in the medical records of women having ectopic pregnancies, we distributed the ectopic pregnancies according to the percentage of cases with known race; for 1981, NCHS distributed them according to race distributions in the geographic areas of the hospitals and on the basis of diagnoses and expected sources of payment as shown on medical records that included race. For the calculation of ectopic pregnancy rates, women were grouped into three age categories: 15-24, 25-34, and 35-44 years. For ectopic pregnancy mortality analysis, women were grouped into

six age categories: 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44 years. Because of small numbers of deaths, women 35-44 years old were combined into one age group for comparison purposes. In previous publications CDC has reported mortality due to ectopic pregnancy as deaths per 1,000 cases; however, because mortality rates have declined to less than one death per 1,000 cases of ectopic pregnancies, in this publication mortality is reported as deaths per 10,000 cases. Estimates of the number of ectopic pregnancies have been rounded to the nearest 100. The rounding and the redistribution of cases in which race is unknown sometimes cause the sum of individual numbers not to equal the total. Rates were calculated from the unrounded estimates.

Results

For the period 1970-1983, an estimated 563,100 ectopic pregnancies occurred among women 15-44 years old in the United States, with an overall rate of 9.2 per 1,000 reported pregnancies (Table 1, Figure 1). Except for 1982, the number of ectopic pregnancies increased each year from 1970 through 1983.

Between 1970 and 1983, the total number of ectopic pregnancies increased 3.9-fold, from 17,800 to 69,600 per year. For white women, the number increased fourfold, from 12,900 in 1970 to 51,800 in 1983; for black women, the number increased 3.6-fold, from 4,900 in 1970 to 17,800 in 1983. For all women combined, the rate increased 3.1-fold, from 4.5 in 1970 to 14.0 in 1983; rates increased 3.4-fold and 2.2-fold for white and black women, respectively (Table 1).

For the period 1970-1983, the risk of ectopic pregnancy increased with age and was highest for women 35-44 years old. White women 35-44 years of age had a threefold higher risk than white women 15-24 years old, whereas black women 35-44 years old had a 4.3-fold higher risk than black women 15-24 years old (Table 2, Figure 2).

TABLE 1. Number and rate of ectopic pregnancies for females ages 15-44, by race* and year, United States, 1970-1983

Year	Number†			Rate§		
	White	Black	Total	White	Black	Total
1970	12,900	4,900	17,800	4.0	7.1	4.5
1971	13,900	5,300	19,300	4.2	7.3	4.8
1972	17,300	7,200	24,500	5.5	9.8	6.3
1973	16,600	9,000	25,600	5.5	11.9	6.8
1974	19,800	6,600	26,400	6.3	8.1	6.7
1975	21,700	8,900	30,500	6.9	10.2	7.6
1976	24,900	9,700	34,600	7.7	10.4	8.3
1977	28,900	11,900	40,700	8.4	11.8	9.2
1978	29,500	12,800	42,400	8.5	12.3	9.4
1979	35,300	14,600	49,900	9.5	13.4	10.4
1980	36,500	15,600	52,200	9.5	14.0	10.5
1981	48,400	19,600	68,000	12.5	17.6	13.6
1982	49,400	12,400	61,800	12.7	10.9	12.3
1983	51,800	17,800	69,600	13.6	15.5	14.0
Total	**406,800**	**156,200**	**563,100**	**8.4**	**11.9**	**9.2**

*Race "unknown" redistributed according to the percentage of race known

†Rounded to nearest hundred; estimates based on <10,000 ectopic pregnancies should be viewed with caution

§Rate per 1,000 reported pregnancies (live births, legally induced abortions, and ectopic pregnancies)

Overall, black women had a 1.4-fold higher risk of ectopic pregnancy than white women. The increased risk existed among all age groups and in all regions except in the West, where the risk was slightly higher for white women (Table 2). Black women 35-44 years old had the highest risk of ectopic pregnancy. Their risk was five times higher than that of white women 15-24 years old, the group with the lowest rate.

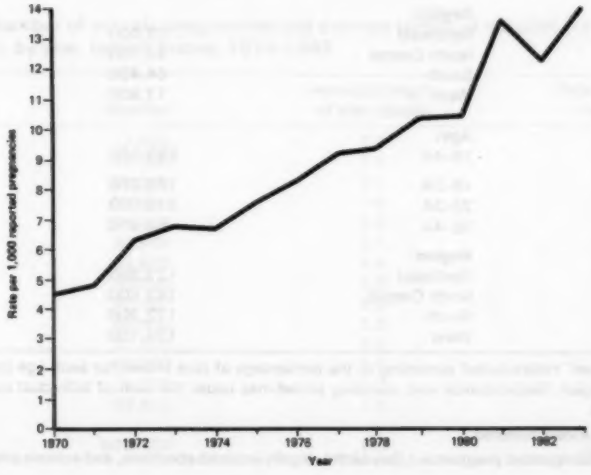
The overall rates of ectopic pregnancy were similar in the four geographic regions (Table 2). However, the race- and region-specific rates showed some variability. For white women the highest rates were in the West and the lowest in the South, whereas for black women the highest rates were in the North Central region and the lowest in the West (Table 2).

The average length of stay among women hospitalized for ectopic pregnancy decreased from 7.2 days in 1970 to 4.8 days in 1983. Despite this decline, the estimated total number of hospitalization days for women with ectopic pregnancy almost tripled from 1970 to 1983 because of the increased number of ectopic pregnancies (Table 3).

In the period 1970-1983, 644 women in the United States died from ectopic pregnancy, making the death rate 11.4 per 10,000 ectopic pregnancies. The risk of death decreased 6.7-fold, from 35.5 per 10,000 ectopic pregnancies in 1970 to 5.3 in 1983 (Figure 3, Table 4). Analysis by race showed similar declines—from 21.7 to 3.3 deaths per 10,000 ectopic pregnancies (6.6-fold) for white women, and from 72.1 to 11.2 deaths per 10,000 (6.4-fold) for black women (Table 4).

For the period 1970-1983, black women were at higher risk of death from ectopic pregnancy than white women, independent of age or geographic location (Table 5). For white women, the highest risk of death was among those 15-19 years old. The risk decreased with age, with women 40-44 years old having the lowest risk. For black women, the lowest risk of death was among those 25-29 years old; the risk was higher for younger and for older women (Table 5, Figure 4).

FIGURE 1. Ectopic pregnancy rates for females ages 15-44, by year, United States, 1970-1983



Discussion

The numbers and rates of ectopic pregnancy have increased every year from 1970 through 1983, except for 1982. Analysis revealed that the number of ectopic pregnancies in 1981 was much higher than expected on the basis of rates of increase during the period 1970-1980 (Figure 1). This resulted in an apparent decrease in the estimated number of ectopic pregnancies for 1982; however, that number was within expectations based on the rate of increase during the preceding 12 years. We cannot explain the disproportionate increase in the number of ectopic pregnancies in 1981, particularly among blacks.

TABLE 2. Number and rate of ectopic pregnancies, by race, age, and geographic region, United States, 1970-1983

Race*	Age/Region	Number†	Rate§
White	Age:		
	15-44	406,800	8.4
	15-24	133,800	5.3
	25-34	232,000	11.3
	35-44	41,000	15.9
	Region:		
	Northeast	86,400	8.2
	North Central	108,700	8.5
	South	107,800	7.6
	West	106,200	9.8
Black	Age:		
	15-44	156,200	11.9
	15-24	51,400	6.4
	25-34	83,900	19.0
	35-44	20,900	27.7
	Region:		
	Northeast	37,000	12.5
	North Central	34,700	14.3
	South	64,400	11.4
	West	17,900	9.2
All races	Age:		
	15-44	563,100	9.2
	15-24	185,200	5.6
	25-34	316,000	12.7
	35-44	61,900	18.6
	Region:		
	Northeast	123,300	9.2
	North Central	143,500	9.4
	South	172,200	8.7
	West	124,100	9.7

*Race "unknown" redistributed according to the percentage of race known for each age group and each geographic region. Redistribution and rounding sometimes cause the sum of individual numbers not to equal the total.

†Rounded to nearest hundred

§Rate per 1,000 reported pregnancies (live births, legally induced abortions, and ectopic pregnancies)

FIGURE 2. Ectopic pregnancy rates, by race and age group, United States, 1970-1983

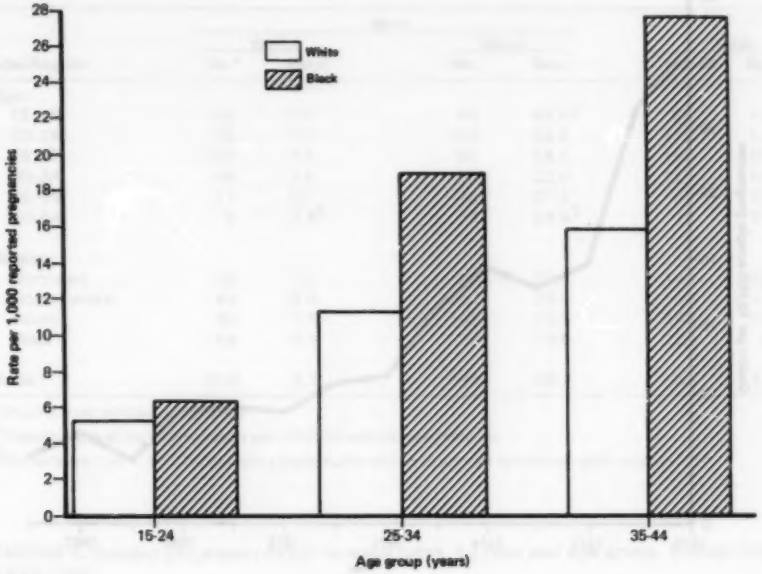


TABLE 3. Number of ectopic pregnancies and average length of hospital stay for females ages 15-44, by year, United States, 1970-1983

Year	Number	Average length of stay (days)	Total person-days hospitalized
1970	17,800	7.2	127,800
1971	19,300	7.1	136,700
1972	24,500	7.1	173,800
1973	25,600	7.4	189,200
1974	26,400	6.8	179,200
1975	30,500	6.1	186,200
1976	34,600	6.4	221,600
1977	40,700	5.8	236,200
1978	42,400	5.9	249,900
1979	49,900	5.9	294,300
1980	52,200	5.8	302,600
1981	68,000	5.5	374,000
1982	61,800	5.2	321,400
1983	69,600	4.8	334,100
Total	**563,100**	**5.9**	**3,327,000**

FIGURE 3. Ectopic pregnancy death-to-case rates, by year, United States, 1970-1983

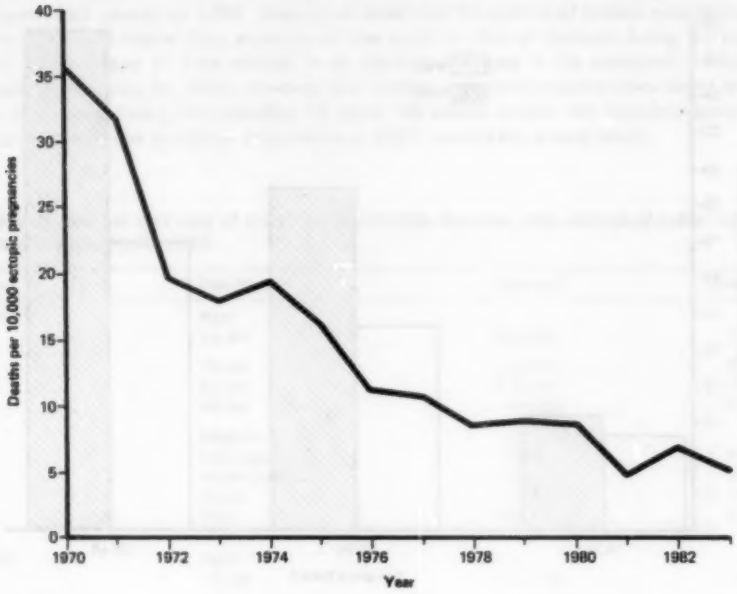


TABLE 4. Number and rate of deaths due to ectopic pregnancy, by race and year, United States, 1970-1983

Year	Number			Rate*		
	White	Black	Total	White	Black	Total
1970	28	35	63	21.7	72.1	35.5
1971	21	40	61	15.1	74.9	31.7
1972	28	20	48	16.2	27.7	19.6
1973	25	21	46	15.1	23.4	18.0
1974	20	31	51	10.1	47.0	19.4
1975	19	31	50	8.8	34.9	16.4
1976	11	28	39	4.4	28.7	11.3
1977	15	29	44	5.2	24.5	10.8
1978	13	24	37	4.4	18.7	8.7
1979	20	25	45	5.7	17.2	9.0
1980	22	24	46	6.0	15.4	8.8
1981	15	19	34	3.1	9.7	5.0
1982	19	24	43	3.8	19.3	7.0
1983	17	20	37	3.3	11.2	5.3
Total	**273**	**371**	**644**	**6.7**	**23.7**	**11.4**

*Deaths from ectopic pregnancy per 10,000 ectopic pregnancies. To compare these rates with previously reported rates per 1,000 ectopic pregnancies, divide the above rate by 10.

TABLE 5. Death-to-case rates for women with ectopic pregnancies, by race, age, and geographic region, United States, 1970-1983

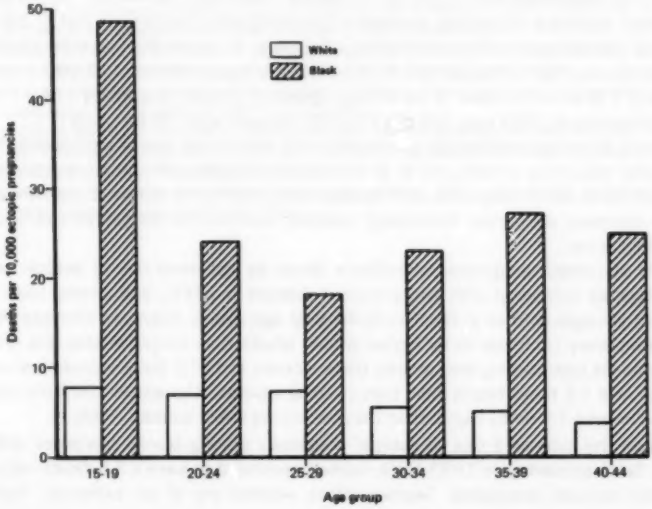
Age/Region	Race: White No.*	White Rate†	Black No.	Black Rate	Total No.	Total Rate
Age:						
15-19	22	7.9	43	48.8§	65	17.8
20-24	75	7.1	103	24.2	178	12.0
25-29	107	7.4	91	18.2	198	10.2
30-34	49	5.6	78	22.9	127	10.4
35-39	17	5.1§	45	27.3§	62	12.5
40-44	3	3.8§	11	24.9§	14	11.3
Region:						
Northeast	62	7.2	86	23.3	148	12.0
North Central	63	5.8	87	25.0	150	10.5
South	80	7.4	163	25.3	243	14.1
West	68	6.4	35	19.6	103	8.3
Total	**273**	**6.7**	**371**	**23.7**	**644**	**11.4**

*Deaths from ectopic pregnancy

†Deaths from ectopic pregnancy per 10,000 ectopic pregnancies

§Rates based on < 10,000 ectopic pregnancies and thus should be viewed with caution

FIGURE 4. Ectopic pregnancy death-to-case rates, by race and age group, United States, 1970-1983



Several hypotheses have been published to explain the occurrence of ectopic pregnancy. Weckstein (*8*), in 1985, grouped causes of tubal pregnancies into two categories: 1) maternal factors, which delay or prevent a fertilized egg from passing into the uterine cavity, and 2) fetal factors, which are inherent in the embryo. Maternal factors include pelvic inflammatory disease (PID), congenital tubal malformation, tubal ligation, and menstrual regurgitation of a fertilized ovum. Fetal factors include embryonic malformations and chromosomal anomalies. Of all these factors, PID is probably the most commonly agreed upon explanation for the ever-increasing incidence of ectopic pregnancy; however, the magnitude of PID's contribution to this increasing incidence is not agreed upon. Breen (*9*) reported that 92% of 684 ectopic pregnancies could be explained by PID (42% of the patients gave a history of PID; 50% gave a history of antibiotic therapy, implying PID). But Niles and Clark (*10*), by pathologic analysis of 436 ectopic pregnancies, found evidence of PID in only 40% of the cases. They concluded that no evidence of PID in 60% of the cases suggests a functional pathogenesis. The increase in PID that has occurred in the United States during the past two decades is responsible for at least part of the increased incidence of ectopic pregnancy (*11*).

Another suggested contributing factor to the increasing incidence of ectopic pregnancy is the increasing proportion of women who are discontinuing the use of oral contraceptives, which have been shown to protect against ectopic pregnancy by depressing ovulation (*12*). NCHS reported that the proportion of women using oral contraception among currently married women dropped from 25.1% in 1973 to 13.5% in 1982 (*13*); however, this trend is not likely to explain the increase in ectopic pregnancies. NCHS also reported that the proportion of currently married women who are surgically sterilized increased from 22.9% to 38.9% during the same period, whereas the proportion of those using other methods of contraception (e.g., intrauterine devices, condoms, diaphragms, foam, abstinence, withdrawal, or douching) essentially did not change (21.5% in 1973 and 21.8% in 1982) (*13*). Women are apparently giving up oral contraception for surgical sterilization, known to have a lower failure rate and to be associated with a very low incidence of ectopic pregnancies. On the basis of 1) the reported incidence of ectopic pregnancy following tubal sterilization and 2) the reported numbers of sterilizations in the United States, Barnes et al. concluded that tubal sterilization in the United States might precede one to two ectopic pregnancies per 100,000 females ages 15-44, and it does not appear to be a major cause of ectopic pregnancy (*14*). The rate of ectopic pregnancy in 1983 was 126 per 100,000 females ages 15-44 years (*1*).

Improved diagnostic technology (particularly the widespread use of laparoscopy and ultrasonography) may have contributed to an increased recognition of ectopic pregnancies. This, in turn, results in earlier diagnoses and management, leading to improved outcomes. In addition, the improved diagnostic technology partially explains the decreased mortality due to ectopic pregnancy.

Results of ectopic pregnancy surveillance show an increased risk of ectopic pregnancy among black as compared with white women (except in 1982), and among older as compared with younger women in the 15- to 44-year age group. However, whereas the rate of ectopic pregnancy continues to be higher among blacks than among whites, the rate among white women is approaching that among black women. In 1970, black women had an ectopic pregnancy rate 1.8 times higher than that of white women, whereas in 1983 the rate among black women was 1.1 times higher than the rate among white women (Table 1).

Although the increased rate of ectopic pregnancy among blacks compared with whites seems to be disappearing, in 1983 black women continued to have a 3.5-times-higher risk of death from ectopic pregnancy. Teenage black women are at an extremely high risk of

death—6.2 times higher than white teenagers. Black teenagers are at a 10-times-higher risk of death than white women 35-44 years of age, the group with the lowest risk of death.

Deaths due to ectopic pregnancy can be related to the timing and quality of prenatal care. Early prenatal care provides for the timely diagnosis and management of ectopic pregnancy. Fewer blacks and younger women than whites and older women are reported to have prenatal care and to start such care during the first trimester (*15*). This may help explain the higher mortality rate among blacks and younger women than among whites and older women.

Finally, because the NHDS is a sample survey that does not include medical records of patients discharged from federal hospitals, and because some ectopic pregnancies are known to resolve spontaneously and therefore remain undiagnosed, the reported number of ectopic pregnancies undoubtedly is an underestimate of the true number. Furthermore, our estimate of reported pregnancies is an underestimate because it does not include spontaneous abortions and because the number of legally induced abortions reported to CDC is consistently lower than the number that the Alan Guttmacher Institute obtains by direct survey of legal abortion providers. Our estimates of ectopic pregnancy death rates, therefore, are somewhat high.

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